Original Article

The Relationship between Safety Climate with Fatalism and Perceived Helplessness among Workers: Implication for Health Promotion

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Abstract

Introduction: Safety climate received substantial attention due to its potential for explaining variation in safety-related outcomes. The present study examined degree of safety climate related to fatalism and perceived helplessness among workers' Isfahan Steel Company.

Materials and Methods: The current study was a correlation study. Sample consisting of 189 employees in Isfahan Steel Company in 2012 was selected according to the stratified random sampling method. Data gathering tools were questionnaires of demography characteristics, safety climate of Hayes, Perander, Smecko, et al. (1998), fatalism of Williamson et al. (1997) and perceived helplessness of Cohen, Karmark & Mermelstein (1983). The data were analyzed by SPSS software version 15 and statistical tests of multivariate regression and correlation coefficient.

Results: The results showed that there was internal significant correlation between safety climate, fatalism and perceived helplessness (p<0.05). Also, multivariate regression analysis showed that about 22% and 19% of the variance of fatalism and perceived helplessness variables was significantly predicted by safety climate (p<0.05).

Conclusion: The perception of fatalism and helplessness in work environments can be obstacles to prevent occupational accidents. Promoting safety climate can be associated with fatalism culture change and also perceived helplessness reduction among workers.

Keywords: safety climate, Fatalism, Helplessness, Occupational accidents

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Introduction

Safety climate received considerable attention due to its potential for explaining variation in safety-related outcomes [1]. Safety climate is defined here as ''employees' perceptions pertaining to safety policies, procedures, and practices'' (Quoted from Zohar [2]. Policies and procedures are the guidelines established to certify safe behavior, and practices are the process of the implementation of the policies and procedures as well as workers' perceptions of the relative importance of safe behavior at workplace [3]. The previous researches indicated that a positive safety climate is a critical part of a safe workplace. In briefly, safety climate is a theoretical term concentrating more on the perception of behaviors than on the behaviors themselves [4]. Safety climate reflect the extent to which workers believe that their individuals' safety and health are valued within the organization and reflect the relative stress that employees believe is placed on safety vs. productivity [3, 5, 6]. There is increasing evidence of safety climate as an antecedent of safety performance [7]. It also has been suggested that safety climate would be related to employees' perceptions of the role of chance and fate in occurring accidents [39] and the perception of control in work environment [51].

Fatalism is an obstacle to the adoption of safe working behavior [10]. Fatalism describes the belief that injuries are unavoidable and happen due to haphazard or fate [11]. It is negatively related with reporting job risk [12]

and is positively related with self-care disorder [13]. Believe to fatalism have negatively influenced the acceptance of safe work practices [14]. Fatalism describe as the complicate psychological construct that can be recognized by perceptions of worthlessness, powerlessness, hopelessness, and futile [15].

Researchers showed that fatalism is related with and lack of training in work environments [16] and can be considered as an attitude variable [17, 18]. The results of Patwary, O'Hare and Sarker [19] showed that fatalistic beliefs among personnel of an organization that attributed these events to "*fate*" reflecting their perceived lack of control over accidents and reveals a lack of organizational awareness that can occur within a culture of fatalism. Believe to fatalism may facilitate the attitude that accidents are unprofitable and consequently, increases helplessness in among workers [20].

Increasing attention in the literature focused upon learned helplessness [21]. Helplessness related with coping style of denial and avoidance [22], decreasing the well being [23], and increasing depression, anxiety and physical illness [24]. It negatively related to work adjustment in newcomers [25] and positivity related to work alienation, include deficiency in job involvement [26]. Individuals that feel they are exposed to uncontrollable job events and cannot do anything to change these events experience helplessness [27]. Helplessness is a psychological state in which an individual to believe that no control over a circumstance environment that her action is

meaningless and it results from cognitive, motivational, and emotional deficiencies in individuals [28]. Abramson, Seligman & Teasdale [29] stated that the type of the individual's attributions on uncontrollable events predict the degree and parameters of helplessness. A attribution is personal/stable/global predict serious consequences for a person, because the person (a) will search defect for the unpleasant events her/his inside, (b) believes that the outcome of events is stable and (c) event will happen again. Conversely, a attribution is universal/unstable /specific, can predicted more positive outcomes, because the person (a) will search defect for the unpleasant events her/his outside, (b) believes that the outcome of events is temporary (c) the event is a special position [30]. But the mere observation of such deficiencies is not sufficient in order to conclude about the experience of helplessness, Individuals should also perceive that the outcome of the event don't depend on their response [31].

People work in the steel industry have been identified as having higher frequencies of occupational health problems, including musculoskeletal problems, than the total workforce As a high risk industry, there is a need to investigate factors that affect the occurrence of these accidents to be able to protect workers [32]. There are many studies that show fatalistic beliefs [33, 34] and perceived helplessness [23, 24] is related to accidents occurrence in workplace. Also, safety climate can be considered as a strong factor to

perceive control over occupational accidents occurrence [35]. With attention to stated material above, aim of the present study was the examination of the relationship between safety climate with fatalism and perceived helplessness.

Materials and Methods

This correlation study was administrated between Jan and Feb 2012 in Esfahan Steel Company. Esfahan Steel Company (Zob Ahan-e Esfahan) opened in late 1960s, based close to the cities of Fooladsh\ahr and Zarrinshahr, Esfahan Province. Esfahan Steel Company (ESCO) is the first and largest manufacturer of constructional steel products in Iran (No=8300) [36]. In this research, in attention to the extent and distribution of the employees in the different parts of Esfahan Steel Company (Tohid Building, Navard part, blast furnace, steel making, coke, fire, railway, gas, oxygen plant, technical guidance etc.), the sample (n=200) was selected according to the stratified random sampling method. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics. A random sample from each stratum is taken in a number proportional to the stratum's size when compared to the population. These subsets of the strata are then pooled to form a random sample. Then simple random sampling or systematic sampling is applied within each stratum. This often improves the representativeness of the sample by reducing sampling error. It can produce a weighted mean that has less variability than

the arithmetic mean of a simple random sample of the population. The sample size was calculated using of SPSS (version 15), Following the procedure recommended by Molavi [37]. Given an, α level 0.05 and a power of 90 percent, the sample size required was estimated to be 200 subjects. Informed consent was obtained from each participant and was approved the research by the appropriately constituted ethics committees at Isfahan university. The number of returned questionnaire that is response rate was 189 (94.5%) workers.

Data gathering tools: Validated instruments were used for data gathering such as safety climate with 50-items of Hayes, Perander, Smecko, et al. [38] fatalism with 7-items of Williamson et al. [39] and perceived helplessness with 6-items of Cohen, Karmark & Mermelstein [40]. At first, all questionnaires were translated from English into Persian by an English expert and independently back-translated into English by a second translator. The few discrepancies between the original English and the back-translated version resulted in adjustment in the Persian translation based on direct discussion between the translators. No questions were deleted or added to the original questionnaires.

At next step, psychometric characteristics of instruments were examined. Linguistic validation was performed by three experts of psychology department and five experts of safety and health departments. Thus, the questionnaires were piloted and finalized with an advisory group of workers to ensure that the scales items were comprehensible and appropriate to the context. Moreover, conceptual analysis was confirmed the linguistic validity of all instrument. The questionnaires were distributed to workers with the help of union steward. Participants were assured of confidentiality and informed consent in written format was acquired from each them. Data gathering tools were as follow:

Demographic factors: Five demographic factors, namely age, gender, marital status, education, shift status, and years of working experience, were included. Marital status was classified as married or not married (including divorced and widowed).

Fatalism: Fatalism was measured by 7-items of Williamson et al. [39]. The items refer to views of importance and controllability of safety hazards. It is Based on a Likert style of 5 scores from 1(strongly disagree) to 5 (strongly agree). A sample question is ''accidents will happen no matter what I do.''. The scores of participants were obtained by adding their responses to a 7-items questionnaire. The Higher scores indicate that employees perceive safety hazards inevitable and uncontrollable. Evidence of reliability of this scale, as administered to Iranian relevant populations, with original data of this research, was calculated by Alpha Coefficient 0.79 and by Split-half 0.78.

Safety climate: Workers' perceptions of safety climate were measured with the 50-item workplace safety scale (WSS) developed by Hayes, Perander, Smecko, et al. [38]. This

instrument assesses employees' perceptions of work safety and measures five distinct constructs of safety climate, each with 10 items: (a) job safety perception (sample item: "Safety programs are effective"; α = .88), (b) coworker safety perception (sample item: "Pay attention to safety rules"; α = .77), (c) supervisor safety perception (sample item: "Enforces safety rules"; α = .91), (d) safety management perception (sample item: "Responds to safety concern"; α = .89), (e) safety programs and policies perception (sample item: "Effective in reducing injuries"; α = .81). The total coefficient α score was .91. Participants responded on a 5-point scale ranging from 1— strongly disagree to 5— strongly disagree. The scores of participants were obtained by adding their responses to a 50-items questionnaire. Higher scores indicate that employees perceive better safety climate in their work environment. Past research has shown this questionnaire to have good psychometric properties [41].

Perceived helplessness scale: Perceived helplessness was measured with the 6-item of perceived helplessness developed by Cohen, Karmark & Mermelstein [40]. The items asked respondents how often they found their lives unpredictable, uncontrollable, and overloaded [42]. All the items we used were modified to ensure that they were appropriate for the industrial context and were included a number of direct questions about the current levels of perceived helplessness. A sample item is ''in the last month in work environment, how often

have you been angry because of the things that were outside of your control.''. The questions in this scale ask about feelings and thoughts during the last month. In each case, respondents are asked about how often they felt in a certain way. Scoring is based on a Likert-scale format from never (0) to very often [4]. The scores of participants were obtained by adding their responses to a 6-items questionnaire. Higher scores indicate that occupational events are perceived as unpredictable and uncontrollable by workers. This scale has validity (reliability = .84, .85, .86 in three cases), high internal reliability (0.79 = Cronbach's Alpha) and acceptable validity [43]. Internal consistency (Cronbach's α) in this study in Iran was 0.88 which was excellent for this scale.

The participants of this research completed the questionnaires of fatalism, safety climate and perceived helplessness in a one-hour meeting with the researchers or co-researchers. A covering letter explained the purpose of study, and that participation in the study was confidentially was guaranteed. Respondents were asked to return completed questionnaires inside the sealed envelopes either to the person who had distributed them or directly to the research team.

The Statistical Package for the Social Sciences (SPSS) version 15 was used to data and descriptive statistics was used to summarize and organize the data. This data were analyzed by correlation coefficients and multivariate regression analysis.

Results

Almost the majority of participants that is 90 percent were male because the main occupational groups were at production line in this study. Ages ranged from 18 to 53; the mean age of the participants was 34 yr (SD=5.58 yrs) and average work experience was 12 yr (SD=3.2 yrs) (Table 1).

Table 1: Demographic characteristics of the sample members (N=189)

		Frequency	Frequency Percentage (%)
Age	18 to 29 yrs	68	36%
	30 to 41 yrs	68	36%
	42 to 53 yrs	53	28%
Sex	Male	170	90%
	Female	19	10%
Marital status	Married	113	60%
	Single	76	40%
Education	Master degree	22	12%
	University graduates	45	24%
	High school graduates	113	60%
	Primary school graduates and lower	9	4%
Work experience	5 years and lower	68	36%
	6 to 15 years	45	24%
	16 to 25 years	45	24%
	26 years and higher	31	16%
Shift *status*	Shift	120	64%
	Not shift	69	36%

Mean, standard deviation and internal correlations of variables under study are presented in table 2. Pearson correlation test showed that safety climate (M=64.16, SD=8.01) have significant relationships with fatalism (M=20.07, SD=2.53) and perceived helplessness (M=12.95, SD=4.37) ($p<0.05$).

Table 2: Descriptive indexes of variables under study (n=189)

Variable	Mean	SD	Correlation 1	2	3
Safety climate	64.16	8.01	1		
Fatalism	20.07	2.53	-0.47**	1	
Perceived helplessness	12.95	4.37	-0.43**	0.34*	1

*p<0/05, **p<0/01

To assess the amount of shared variance of predictor variable (safety climate) and criterion variables (fatalism and perceived helplessness) were used of the canonical correlation method that is performed with multivariate regression analysis (Table 3).

Table 3: Multivariate regression analysis results

Effect	Value	F	df	Error df	Sig	Partial Eta Squared	No cent. Parameter	Observed Power
Pillai's Trace	0.31	10.33	2	186	.0001	0.31	20.66	0.98
Wilk's Lambda	0.69	10.33	2	186	.0001	0.31	20.66	0.98
Hotelling's Trace	0.44	10.33	2	186	.0001	0.31	20.66	0.98
Roy's Largest Root	0.44	10.33	2	186	.0001	0.31	20.66	0.98

As in table 3 is observed, overall, safety climate predicted almost %31 of variance of fatalism and perceived helplessness variables (p<0.01). Univariate analysis was performed for assessing the shared variance of predictor variable (safety climate) and the criterion variables (fatalism and perceived helplessness) separately (Table 4).

Table 4: Univariate analysis results

Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power
Fatalism	70.41	1	70.41	13.88	0.001	0.22	0.95
Perceived helplessness	173.95	1	173.95	10.93	0.002	0.19	0.90

As can be seen in table 4, about 22% and 19% of the variance of fatalism and perceived helplessness variables was significantly predicted by safety climate (p<0.05). Observed powers of 0.95 and 0.90 showed that sample size was sufficient for this research.

Discussion

In the developed and developing countries, occupational accidents have been known as one of the most important factors contributing to hurt physical and mental health of workers [44, 45]. Changing fatalism culture and reducing the perception of helplessness among employee can be an effective procedure for preventing accidents in workplaces [23, 24, 33, 34]. Aim of the present study was the examination of the relationship between safety climate with fatalism and perceived helplessness.

As was showed in the results section, the findings indicated that safety climate significantly predicted fatalism among workers. These results were aligned with findings of other research [46-48]. Silva et al. [46] commented on the role of "safety climate" on how individuals made sense of the occurrence of accidents, finding that individuals working in a positive safety climate tended to make more internal attributions than employees in a negative safety climate. Fatalism can be as a sub-divided of external locus of control [49]. Individuals with internal locus of control tend to believe that they can prevent accidents and injuries. In contrast, employee with external locus of control tends to believe that accidents and injuries are due to forces outside their control, such as fate, or fatalism [50]. Therefore, a positive safety climate with making internal attributions in workers can change fatalistic beliefs. Kouabenan [47] concluded that fatalistic workers take bigger risks because they have limited knowledge of accidents and week attitude toward safety issues, leading them to misestimate the possibility of their occurrence. Also, Henning and et al. [48] showed that fatalism to be negatively related to attitudes and safety climate.

Also, the results showed that safety climate significantly predicted perceived haplessness in workers. These results were aligned with

findings of other research [51, 52]. These studies showed that safety climate is related to perceived helplessness and uncontrollability. The perception of uncontrollability usually occurs when a person has previously failed to achieve their career goals. If people think that they are unable to control events and attribute them to internal/stable/global causes, would perceive helplessness; Helpless individuals perceived future events uncontrollable [53]. The week safety climate in work places often suggested a sense of helplessness and uncontrollability. They felt that they had no control over accidents occurrence which, to them, seemed to be unavoidable and uncontrollable [28].

Implication for health promotion: In identifying workplace factors that lead to injuries in workplace, recent studies has highlighted safety climate as a leading indicator of safe behaviors and accidents [54, 55]. A strong, positive safety climate is created when job tasks, management, coworkers and consistently encourage employees to do their jobs safely. A positive safety climate is a critical aspect of a safe work environment [56]. Management acts and behaviors are an important area for intervention in improving safety climate [57]. A positive safety climate, shaped by supervisors' commitment and sight to safety, is related to improved communications about safety and human errors [58]. Also, in cases where individuals hold 'un-scientific' views about accidents or disease causation, it is taken as evidence of their need for training. This view is located

within the health promotion courses which underline the values of rationality, logical thought, planned decision making, self-efficacy and an internal locus of control [59, 60]. Training can be reach employees to the belief that they are in control of their lives and have the capacity to act effectively and decisively, then their chance of pursuing a given health action which they believe is rational is that much greater than those having a different self-concept. It is better, individuals reach to the belief that everybody is charge of one's own life; this belief is a key value of the effective health promotion courses [59]. Many studies, especially those in the context of healthcare, indicate that targeted educational programs may be successful so long as they recognize the effect of individual and cultural attitudes and beliefs [61, 62]. On the other hand, Abraido-Lanza et al. [63] have warned against the inactive manner in which fatalism is sometimes described and culture obstacles as innate obstacles which they see as being unsuitable and counterproductive. Therefore, any interventions that are designed must be accurately implemented. It also seems that they need to be addressed to managers as well as to employees.

Conclusion

The current study found evidence of links between safety climate with fatalism and perceived helplessness. our finding suggest that the existence of fatalism culture and helplessness in work places can be simple indicators of week safety climate in

organization, and coping strategies can be used to alleviate this variable due to promoting safety climate. Therefore, safety climate should be promoted to change the fatalism culture and perceived helplessness. The present study needs to be replicated in different populations and needs more empirical support. Till then, the findings of the study should be interpreted with caution. Further, the cross-sectional design of the study and participants (i.e., a group of employee) exert some limitations on the generalization of the findings. Finally, the problems and limitations on the use of self-repotting instruments should not be overlooked. However, limitation is usually accepted due to the self report surveys are considered the most practical way to collect data and to reflect individual attitudes and behaviors [5, 64].

Acknowledgement

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